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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,031	11/19/2003	Mark L. DiOrio	MTB005US1P	7148
27906 7590 11/23/2007 PATENT LAW OFFICES OF DAVID MILLERS 1221 Sun Ridge Road Placerville, CA 95667			EXAMINER PATEL, PARESH H	
			ART UNIT 2829	PAPER NUMBER
			MAIL DATE 11/23/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/718,031

Applicant(s)

DIORIO, MARK L.

Examiner

Paresh Patel

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5,7-10 and 29-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,7-10 and 29-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-2, 5, 7-10 and 31-35 have been considered but are moot in view of the new ground(s) of rejection. Applicant has argued the reference Cheng et al. in response to the office action dated 09/20/2004. In response dated 12/20/2004 Applicant argued that "The conventional probes and needles of Cheng ... fail to suggest a probe using bumps." Examiner disagrees because broadest reasonable interpretation of claimed bumps satisfies the needle as recited by the Cheng et al. reference.

Election/Restrictions

2. Applicant's election without traverse of Group I, claims 1-2, 5, 7-10 and 29-35 in the reply filed on 08/30/2007 is acknowledged.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-2, 5 and 29-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Cheng et al. (US 6621710) and Berger et al. (US 6020750).

Regarding claim 1, Cheng et al. (hereafter Cheng) in fig. 1-3 discloses a probing system for testing a device [310] comprising:

a probe [fig. 2] comprising a semiconductor die [220] and probe tips [223] rigidly attached to the semiconductor die, wherein the probe tips comprise bumps [223] that are arranged in a pattern that matches a pattern of terminals on the device [see fig. 3] and that directly contact the terminals during testing of the device, the probe tips being affixed to the semiconductor die so that the pattern of the probe tips expands/contracts with thermal expansion/contraction of the semiconductor die [because of silicon material used for 310 and 220, see Berger et al. US Pat. 6020750 for more detail];

a substrate [226] on which the semiconductor die is mounted;

a probe card [fig. 1 except for probe and substrate] including a receptacle [receptacle for probe and substrate] sized to hold the substrate, wherein the substrate is detachably mounted [using vacuum hole 210 and air pump 250, see fig. 3 in the receptacle; and

a tester [tester, see lines 31-35 of column 2] electrically connected to the probe tips.

Regarding claim 2, Cheng discloses the system of claim 1, wherein the device comprises a semiconductor material [silicon] that is substantially the same as material in the semiconductor die [silicon].

Regarding claim 5, Cheng discloses the system of claim 1, wherein the substrate [226] is substantially identical to a substrate used in a flip-chip package for the device.

Regarding claim 29, Cheng discloses the system of claim 1, further comprising contact pads [224] that are directly on the semiconductor die, wherein the bumps respectively reside on the contact pads.

Regarding claim 30, Cheng discloses the system of claim 29, wherein the contact pads have a pattern identical to corresponding contact pads on the device tested [see fig. 3].

Regarding claim 31, Cheng discloses the system of claim 1, wherein surfaces of the bumps that contact the device are planar and in the same plane [see fig. 3].

Regarding claim 32, Cheng discloses the system of claim 1, wherein the semiconductor die [220] is substantially identical [see fig. 3] to the device [310].

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7-9 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng as applied to claims 5 and 1 above, and further in view of Komori (US 6480012) and Ahn et al. (US 6379982).

Regarding claims 7 and 34, Cheng discloses all the elements including semiconductor die [220] and a substrate [226]. However, Cheng's die does not comprise: terminals on a bottom surface of the semiconductor die; and conductive vias

that pass through the semiconductor die and provide electrical connections between the probe tips on a top surface of the die and the terminals on the bottom surface.

Komori discloses a die [13] that comprises terminals [17, see fig. 15] on a bottom surface of the semiconductor die; and conductive vias [44 in 35, also see element 36 in 28 of fig. 11 in Ahn et al. US 6379982] that pass through the semiconductor die and provide electrical connections between the probe tips on a top surface of the die and the terminals on the bottom surface. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the system of Cheng with die of Komori, in order to take advantages that Komori has to offer.

Regarding claim 8, Komori discloses the system of claim 7, wherein the terminals of the semiconductor die directly contact the substrate [see fig. 15-16].

Regarding claim 9, the combination of Cheng and Komori discloses the system wherein terminals on the substrate directly contact the probe card.

Regarding claim 33, the combination of Cheng and Komori as disclose above at rejection of claim 7 discloses all the elements of the system including the bumps [21] are of a type suitable for use in a flip-chip package.

Regarding claim 35, the combination of Cheng and Komori as disclose above at rejection of claim 7 discloses all the elements of the system including the solder [inherent to bonding] attaches the semiconductor die to the substrate [see fig. 16 as an example for bonding of wire 45 between 17 and 20].

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng as applied to claim 1 above, and further in view of Komori (US 6480012), and ~~Ahn et al. (US 6379982)~~

Regarding claim 10, Cheng discloses all the elements except for the system further comprising a positioning system adapted to position the probe relative to the device so that the probe tips contact the terminals on the device. Komori discloses the positioning system [see fig. 13] adapted to position the probe relative to the device so that the probe tips contact the terminals on the device. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Cheng to add positioning system as taught by Komori, in order to obtain advantages that Komori has to offer.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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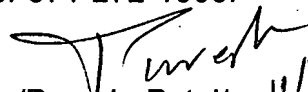
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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paresh Patel whose telephone number is 571-272-1968. The examiner can normally be reached on 8:00 to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on 571-272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


/Paresh Patel/ 11/20/07
Primary Examiner
Art Unit 2829

November 20, 2007